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VII.—*On the Construction of the Map of the Indus,*—p. 118. Communicated by Lieutenant Alex. Burnes, E.I.C.S.*

A "MAP of the Indus and Punjab Rivers from the Sea to Lahore," requires some notice explanatory of its construction, and I have to offer the following observations on that subject.

The river Indus, from the southern direction in which it flows in its progress to the ocean, presents few difficulties to the surveyor, since an observation of latitude serves to fix the daily progress in the voyage, and its comparatively straight course admits of easy delineation. The map, consequently, rests on a series of observations by the stars, taken each night. I should have preferred altitudes of the sun; but, with a people so suspicious as we encountered, it was impossible to use an instrument openly in daylight; and I should have required to halt the fleet twice to procure equal altitudes, since the sun was south of the equator during the voyage. Many of the large places, such as Tatta, Sehwun, Ooch, Mooltan, &c. &c., where we necessarily halted, have been laid down from a mean of eight or ten stellar observations.

The longitude and general delineations in the curvature of the river rest on a minute protraction of its turnings carefully observed every half-hour, and sometimes oftener, with the approved compass by Schmalcalder. The attention given to this important portion of the undertaking may be imagined, when I state that my field-books exhibit, on an average, twenty bearings each day, during sunrise and sunset. I was early enabled to rate the progress of the boats through the water, by timing them on a measured line along the bank, and apportioned the distance to the hours and minutes accordingly. We could advance, I found, by tracking or being pulled by men, at one and a half miles an hour; by gentle and favourable breezes, at two miles; and by violent winds, at three miles an hour; while any great excess or deficiency was pointed out by the latitude of the halting-place for the night.

The base on which the work rests is the towns of Mandivee and Curachee,—the one a sea-port in Cutch, and the point from which the mission started; the other, a harbour, in sight of the western mouth of the Indus, which we saw before entering the river. Mandivee stands in the latitude of 22° 50′, and Curachee in 24° 56′ north; while their longitudes are respectively 69° 34′ and 67° 19′ east, as fixed in 1809, from the chronometers of the Sinde mission, by Captain Maxfield.

Assuming these points as correct, the line of coast intermediate to them has been laid down from my own map of Cutch; while that of Sinde rests on observations of the sun's altitude at noon, and the boat's daily progress, determined by heaving the log hourly. We sailed only during the day; and at all times along shore, often in a small boat, and were attended by six or eight pilots who had passed their lives in the navigation of these parts.

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* Returned to England since the Memoir, p. 118, was printed.

The great difference which will be observed in the topography of the mouths of the Indus from what is shown in all other maps will no doubt arrest attention: but it is to be remarked, that I impeach the correctness of no former survey, since the river has been professedly laid down in this part of its course from *native information,* and I can bear testimony to the correctness of such portions of the Indus as were actually traversed by the mission of 1809. From the jealousy of the Government of Sinde, we had to pass up and down the coast no less than five times, which gave ample opportunities to observe it; and I have a strong fact to adduce in verification of the chart as it now exists. On the third voyage we ran down so low as the latitude of 20° 30′ N., and were out of sight of land for six days. At noon, on the last day (17th March), while standing on a due northerly course, I found our latitude to be 23° 50′, a few miles below that embouchure of the river, which I had resolved to make, and immediately desired the pilots to steer a north-easterly course for the land. We closed with it at sunset, a couple of miles above Hujamree, at the very mouth of the Indus I wished to enter. At daylight, we had had no soundings in fifty fathoms; at seven A.M., we had bottom at forty-two fathoms; and at eleven, in thirty-four. By two in the afternoon, we were in twenty-one fathoms; and at dusk, anchored, in twelve feet of water, off Reechel, having sighted the land at half-past four.

In delineating the Delta of the Indus below Tatta, I have not only had the advantage of sailing up a branch of the river to that city, but likewise approached it on land by one route, and returned by another. I also ascended the Pittee, or western mouth of the Indus, for thirty miles. The opposition experienced from the Sinde government gave rise to these variations of route; they long tried to impede our progress, but the result of their vacillation has happily added to our knowledge of their country, in a degree which the most sanguine could not have anticipated. In addition to my own track, I have added that of the Sinde mission, from Curachee to Hyderabad, and thence to Luckput, in Cutch. My own surveys in Cutch, which extend high up the Koree or eastern branch of the Indus, together with every information, compel me to place the Goonee or Phurraun River (which is the name for the Koree above Ali Bunder) in a more westerly longitude than in the maps hitherto published. Sindree and Ali Bunder lie north of Nurra, in Cutch, so that the river cannot extend so far into the desert as has been represented.

From Hyderabad upwards, and I may add, in all parts of the map, the different towns rest on the latitudes as determined by the sextant. Most of them are in a higher parallel than in the maps ; but it was satisfactory to find, on reaching Ooch, that the longitude of that place, as taken from my own protraction, nearly coincided with that which had been assigned to it by Mr. Elphinstone's surveyors, who must have fixed it from Bhawulpoor. This was not the case with Bukkur: but as the latitude of that place was twenty-two minutes below the true parallel, I have reason to be satisfied with the result above stated. I likewise found, that the Indus receives the Punjab rivers at Mittun, in the latitude of 28° 55′, instead of 28° 20′ N., as given in the map of the Cabool mission ; but no one can examine that document without acknowledging the unwearied zeal of its constructor (the late Lieutenant Macartney), and wondering that he erred so little when he visited so few of the places he has fixed, and received his information from such sources.

The Punjab Rivers have been laid down on the same principle as the Indus. The Chenab (Acesines), which has been erroneously styled Punjnud, after it has gathered the other rivers, is very direct in its course ; but the Ravee (Hydraotes), on the other hand, is most tortuous, and appears on the map in its present course, after a tedious navigation of twenty days. The latitude of its junction with the Chenab and that of the extreme point of the map, the centre of the city of Lahore, which stands in 31° 35′ 30″ N. and in 70° 20′ E. longitude, have materially assisted me in the task. I have also placed the confluence of the Jelum or Behut (Hydaspes), with the Chenab, twelve miles above the latitude in which it has hitherto stood. My survey eastward terminates on the left bank of the Sutledge (Hesudrus), with the British cantonment of Loodeeana, which I find stands in 30°. 55′ 30″ N. latitude. I have used the longitude of the latest and best map, and placed it in 75° 54′ E. I am not answerable for the portion of the river below Lodeeana, having merely given it to show the connexion of the Beeas (Hyphasis) and Sutledge with each other and the rest of the rivers.

On an inspection of the map above described, it will be seen that I have merely confined myself to the banks of the Indus and such other rivers as fell under my own eye. I could have added to it by native information, but this was not my object. I have inserted the route of the Cabool mission, because it crossed my own track, and filled up a portion of the map in a most satisfactory manner. I considered it, from the outset, to be an object of paramount importance, to connect my own surveys with those of that mission, since it completes our knowledge of the Indus from Attok to the sea. Before concluding, I should add, that the figures* on the map denote the soundings of the rivers, which must be considered as at the lowest, from the season of the year they were navigated.

A few typographical errors have crept into the text of the Memoir published with the Map, of which the most remarkable are Leu for Sen, p. 129, l. 3; grain for gram, p. 129, l. 37; and Aoch for Ooch, p. 152, l. 10. It may be also worth observing, that the coin mentioned as having been found at Shorcote (p. 147), and supposed to have Sanscrit characters on it, has been since ascertained to be Bactrian, with a Greek inscription.

VIII.—*Notice of the Caribs in Central America.* Communicated by Colonel Don Juan Galindo, F.R.G.S. Dated Government House, Trugillo, 1833.

THOUGH found in the Caribbean Isles by the Europeans on their first arrival in America, the Carib race is identical in outward appearance with the African negro. Conquered and dispersed, the only remnant of the Caribs occupied a portion of the island of St. Vincent, whence their whole population was brought by the British authorities, in 1796, and landed at Port Royal in Roatan, but a few months afterwards transported by the Spaniards to Trugillo. This port remained their parent settlement, though latterly, as their population increased, colonies of them spread round the shores of the Bay of Honduras; and particularly a town called Stan-creek, to the southward of Belize, composed of emigrants from hence, has risen into importance. The Caribs of Trugillo were unfortunately seduced last year to join a wild attempt of the royalists to overturn the present government of Central America, and their subsequent discomfiture has driven numbers of them hence, who have principally fled to Stan-creek, or scattered themselves along the Mosquito shore to the eastward. Though, in some respects, outwardly converted to the Catholic faith, the Caribs still preserve many of their ancient

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* These figures could not be introduced in the reduced map; but may be referred to at the office of the Royal Geographical Society.